

**C O M M U N I T Y N E W S**

# Bales science students build station mockup

**I**t's hard for young students to understand abstract ideas just by reading or being told about them. Increased comprehension is gained by researching the ideas and putting them into action.

That was the concept that led to the construction of a nearly 18-meter-long space station mockup. Built in only 9 days by 175 sixth-grade science students at Zue S. Bales Intermediate School in Friendswood, Texas, the mockup features a clear plastic shell that houses panels and signs indicating equipment and facilities that range from experiment racks, to crew living quarters, to an Earth observation deck, to emergency medical areas. The mockup was on display for parents,

teachers, students, and other visitors to view in early May.

The idea behind the project was that of Debbie Shearer, sixth grade science and social studies teacher at the school. And with the help of Vikki Ganske, another science/social studies teacher at Bales, they brought this project to the students.

"The vision was to help the students understand more about the space station," said Shearer. "You can show them pictures of the space station, but that is really abstract to an 11- or 12-year-old. So the project was intended to help them learn about the science that will take place aboard the station and about how the astronauts will live."

Construction of the mockup followed weeks of research. The students watched NASA *Lift-off to Learning* videos of the station and the science done in space to learn more about the outpost and experiments that will be conducted aboard it, and they looked at pictures from a project that another class had done previously and at photos of the actual station.

Next the teachers visited JSC, toured the station mockup and measured it. Following discussions to resolve potential design issues, the students built their own mockup, adhering as closely as possible to the same dimensions within the constraints of their classroom.

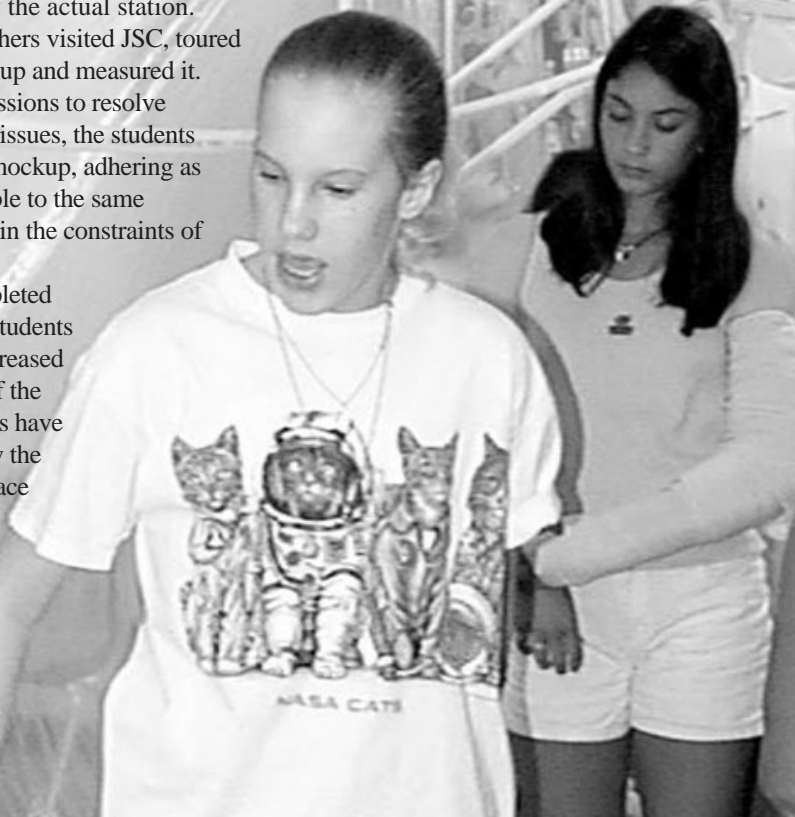
Having completed the project, the students now have an increased understanding of the station. "Students have told me that now the International Space Station Program makes sense

to them. They understand what the astronauts will have to go through and what they will have to do," says Shearer.

The mockup was dismantled at the end of the school year, but some parts of it were kept. Videos and still photos of it were taken for use in teacher workshops and class lessons. ■



JSC Photo P000850 by Juan Galvez



# Urban planners see greener and cooler cities with NASA technology

By **Nicole Cloutier**

**L**andsat images, optical data, thermal imaging and remote-sensing data. Although these technological advances from space exploration may not be top-of-mind with the general public, they are the talk-of-the-town for environmental researchers tackling growing urbanization, diminishing rural landscape and global warming here on Earth.

"Our imaging technology is so accurate that we can now identify and monitor how a parking lot in Atlanta affects that city's weather," said Kamlesh Lulla, Ph.D., chief, Office of Earth Sciences at JSC, at a recent workshop focusing on issues related to Houston's climate and environment. "By-products from our Earth sciences technology can be very useful for urban planners and developers to see how all the elements – weather, vegetation and land development – are interconnected and how they influence the climate."

Images and data from NASA's Earth Sciences enterprise are becoming high profile NASA products these days. In addition to a recently announced partnership with the U.S. Department of Agriculture for land management and watershed studies, more and more environmental scientists and urban planners are seeking NASA's astronaut acquired photography to tackle more sensitive problems such as urban sprawl, heat-islands and other climate-related issues.

"As a NASA center, we at JSC are very committed to bringing technological benefits to the community and organizations that can further apply our research," said Lulla. "Our Earth science research is no exception. The information can be used to monitor and model what kinds of activities on a urban scale influence changes that are happening in our own backyard."

To help spread the word about NASA's Earth science resources and how they can contribute to environmental endeavors, Lulla participated in a recent workshop

entitled "Houston Cool & Green – A workshop on climate variability in the Houston region." The workshop was sponsored by the Houston Advanced Research Center, Texas A&M Sustainable Enterprise Institute, and the Houston Environmental Foresight Program.

The hope is that the 130 research scientists, environmentalists, builders, and city planners who attended the workshop are more aware of resources and information already available. They also can help shape how future Earth data from space is gathered and determine how it can be used for future Houston-area planning.

The workshop featured Dr. Dale Quattrochi and Jeff Luvall, NASA MSFC, authors of the widely reported ATLANTA Project. Their ATLANTA study used NASA remote sensing data and information to reveal direct relationships between urban

development and higher temperatures. The data concluded that mechanisms such as strategic tree planting and use of light colored materials for paving and roofing can reduce what is known as "heat-island" phenomenon.

"The presenters, from NASA, EPA Headquarters and American Forests, offered a rich mix of new technologies that will help us effectively demonstrate the economic effects of urban planning decisions that affect us all," said Tina Davies, Ph.D., senior research associate, HARC Center for Global Studies and coordinator

of Houston Environmental Foresight. "Our hope is that the enormous enthusiasm generated by the workshop will soon result in

tangible benefits for the Houston community."

JSC's OES manages more than 375,000 global images in the NASA Space Shuttle Earth Observations Photography collection. The imagery, collected from as far back as Gemini and Skylab missions, is available via a public domain Web site (<http://images.jsc.nasa.gov/>) as a resource for other organizations. But Lulla anticipates collection of even more useful data as ISS becomes functional.

To that end, his team is

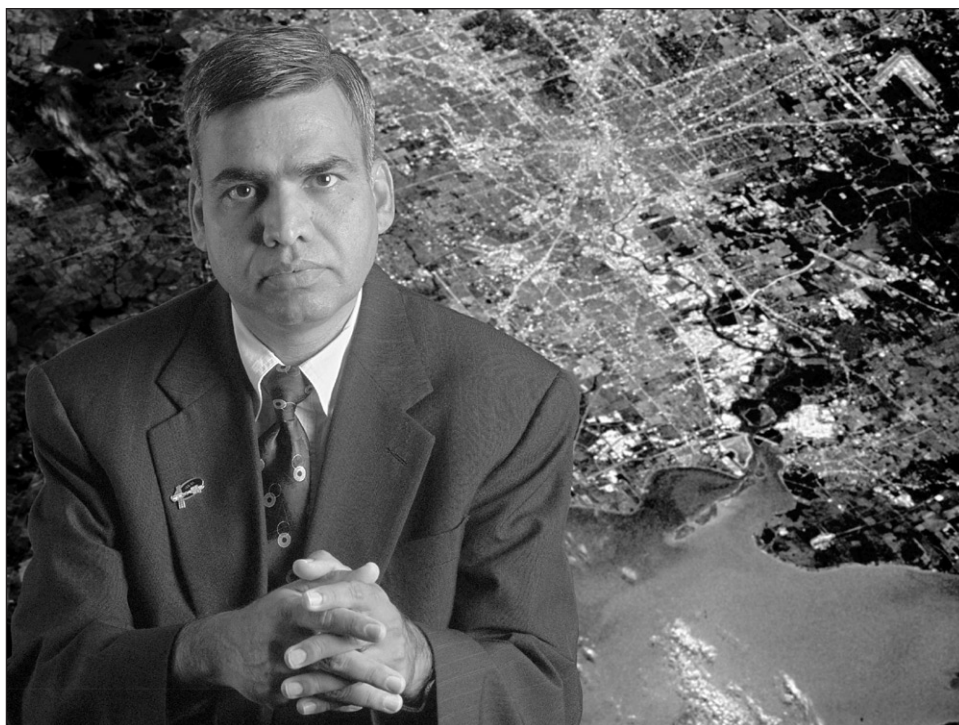
developing three different mechanisms for data collection from ISS:

- ◆ Remote sensing instrumentation from the station's external nodes.
- ◆ A Window Observational Research Facility inside the ISS. This will include a window with a clear aperture 50.8 cm in diameter mounted on the U.S. Laboratory Module, and oriented perpendicular to the Earth's surface most of the time. The WORF will also house observational supplies and provide a stage for sensors and imaging systems.
- ◆ Crew observations and documentation supplemented by hand-held camera photography.

"ISS will serve as an important platform for Earth science research," said Lulla. "And an important aspect of that research will be the crew itself. Part of my job is to make the astronauts 'Earth-smart,' educating them on the planet's geography, geology and weather patterns so they can provide accurate observations from space and we can share in their discoveries." ■

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– Dr. Kamlesh Lulla



JSC Photo 99e06650 by James Blair

**Dr. Kamlesh Lulla, chief of JSC's Office of Earth Sciences, recently addressed a workshop focusing on issues related to Houston's climate and environment. An image of Houston taken from space is shown in the background.**